

What is claimed is:

1. An insulating substrate board for a semiconductor characterized by comprising a ceramic substrate board and a metal alloy layer consisting mainly of aluminum formed on at least one surface portion of the ceramic substrate board, wherein the Vickers hardness of the metal alloy layer is not less than 25 and not more than 40.

2. The insulating substrate board according to claim 1, wherein the metal alloy layer includes silicone of not less than 0.2% by weight and not more than 5% by weight.

3. The insulating substrate board according to claim 1, wherein the metal alloy layer includes Mn of not more than 1.5% by weight.

4. The insulating substrate board according to claim 2, wherein the metal alloy layer includes Mn of not more than 1.5% by weight.

5. The insulating substrate board according to claim 1, wherein the metal alloy layer includes Mg of not more than 1% by weight.

6. The insulating substrate board according to claim 2, wherein the metal alloy layer includes Mg of not more than 1% by weight.

7. The insulating substrate board according to claim 3, wherein the metal alloy layer includes Mg of not more than 1% by weight.

8. The insulating substrate board according to claim 1, wherein the ceramic substrate board is made of a material selected from a group consisting of alumina, aluminum nitride, and silicone nitride.

5 9. The insulating substrate board according to claim 2, wherein the ceramic substrate board is made of a material selected from a group consisting of alumina, aluminum nitride, and silicone nitride.

10 10. The insulating substrate board according to claim 3, wherein the ceramic substrate board is made of a material selected from a group consisting of alumina, aluminum nitride, and silicone nitride.

15 11. The insulating substrate board according to claim 4, wherein the ceramic substrate board is made of a material selected from a group consisting of alumina, aluminum nitride, and silicone nitride.

12. The insulating substrate board according to claim 5, wherein the ceramic substrate board is made of a material selected from a group consisting of alumina, aluminum nitride, and silicone nitride.

20 13. A power module characterized by comprising a metal base plate, a ceramic substrate board, one surface of which is bonded to the metal base plate, a metal alloy layer consisting mainly of aluminum formed on at least one surface portion of the ceramic substrate board, and a semiconductor tip formed on the other surface

of the ceramic substrate board, wherein the Vickers hardness of the metal alloy layer is not less than 25 and not more than 40.

14. The power module according to claim 13, wherein the metal alloy layer includes silicone of not less than 0.2% by weight and not more than 5% by weight.

15. The power module according to claim 13, wherein the metal alloy layer includes Mn of not more than 1.5% by weight.

16. The power module according to claim 14, wherein the metal alloy layer includes Mn of not more than 1.5% by weight.

10 17. The power module according to claim 13, wherein the metal alloy layer includes Mg of not more than 1% by weight.

18. The power module according to claim 14, wherein the metal alloy layer includes Mg of not more than 1% by weight.

15 19. The power module according to claim 15, wherein the metal alloy layer includes Mg of not more than 1% by weight.

20. The power module board according to claim 13, wherein the ceramic substrate board is made of a material selected from a group consisting of alumina, aluminum nitride, and silicone nitride.

21. The power module board according to claim 14, wherein the ceramic substrate board is made of a material selected from a group consisting of alumina, aluminum nitride, and silicone nitride.

22. The power module board according to claim 15, wherein the ceramic substrate board is made of a material selected from a group consisting of alumina, aluminum nitride, and silicone nitride.

25 23. The power module board according to claim 16, wherein

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the ceramic substrate board is made of a material selected from a group consisting of alumina, aluminum nitride, and silicone nitride.

24. The power module board according to claim 17, wherein the ceramic substrate board is made of a material selected from a group consisting of alumina, aluminum nitride, and silicone nitride.

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